(FILE 'HOME' ENTERED AT 09:29:54 ON 21 JUN 2000)

FILE 'MEDLINE, BIOTECHDS, EMBASE, BIOSIS, SCISEARCH, CANCERLIT, CAPLUS'
ENTERED AT 09:30:06 ON 21 JUN 2000

L1 1168 S (RELEASE OR UNWIND OR SEPARATE) AND HELICASE
L2 96 S L1 AND RNA (10N) DUPLEX
L3 96 S L1 AND (RNA (10N) DUPLEX)
L4 745 S 96 AND (FLUOROPHORS OR LUMINESCENT OR FITC OR FLUORESCEIN
ISC
L5 39 S L4 AND ENERGY
L6 0 S L3 AND (FLUOROPHORS OR LUMINESCENT OR FITC OR RHODAMINE)
L7 2 S L3 AND LABEL
L8 267 S PYLE A?/AU OR JANKOWSKY E?/AU
L9 8 S L8 AND RELEASE
L10 188 S L8 AND RNA
L11 17 S L10 AND (RELEASE OR UNWIND OR SEPARATE)
L12 0 S L3 AND LUMINESCENT
L13 2 S L3 AND LABEL
L14 0 S S HELICASE AND (LUMINESCENT OR FLUOROPHORS OR FITC IR
RHODAMI
L15 10 S HELICASE AND (LUMINESCENT OR FLUOROPHORS OR FITC IR
RHODAMINE
L16 12 S HELICASE AND (LUMINESCENT OR FLUOROPHORS OR FITC OR
RHODAMINE
L17 8 S L16 AND RNA
L18 0 S L17 AND (RELEASE OR UNWIND)
L19 0 S TAGGED TARGET NUCLEIC ACID
L20 30 S TAGGED NUCLEIC ACID
L21 7 S L20 AND PRIMER
L22 0 S L7 AND PROMOTER
L23 0 S DT PRIMER REGION
L24 64 S ENZYMATIC AND TAGGING
L25 4 S L24 AND NUCLEIC ACID

The DEAH-box protein PRP22 is an ATPase that mediates ATP-dependent mRNA **release** from the spliceosome and unwinds **RNA** duplexes

AUTHOR: Wagner J D O; **Jankowsky E**; Company M; **Pyle A M**; Abelson J N (Reprint)

CORPORATE SOURCE: CALTECH, DIV BIOL, 147-75, PASADENA, CA 91125 (Reprint); CALTECH, DIV BIOL, PASADENA, CA 91125; COLUMBIA UNIV, COLL PHYS & SURG, DEPT BIOCHEM & BIOPHYS, NEW YORK, NY 10032

COUNTRY OF AUTHOR: USA

SOURCE: EMBO JOURNAL, (15 MAY 1998) Vol. 17, No. 10, pp. 2926-2937

Publisher: OXFORD UNIV PRESS, GREAT CLARENDON ST, OXFORD OX2 6DP, ENGLAND.

ISSN: 0261-4189.

DOCUMENT TYPE: Article; Journal

FILE SEGMENT: LIFE

LANGUAGE: English

REFERENCE COUNT: 44

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB Of the proteins required for pre-mRNA splicing, at least four, the DEAH-box proteins, are closely related due to the presence of a central ' **RNA** helicase-like' region, and extended homology through a large portion of the protein. A major unresolved question is the function of these proteins. Indirect evidence suggests that several of these proteins are catalysts for important structural rearrangements in the spliceosome. However, the mechanism for the proposed alterations is presently unknown. We present evidence that PRP22, a DEAH-box protein required for mRNA **release** from the spliceosome, unwinds **RNA** duplexes in a concentration-and ATP-dependent manner. This demonstrates that PRP22 can modify **RNA** structure directly. We also show that the PRP22-dependent **release** of mRNA from the spliceosome is an ATP-dependent process and that recombinant PRP22 is an ATPase, Nonhydrolyzable ATP analogs did not substitute for ATP in the **RNA** -unwinding reaction, suggesting that ATP hydrolysis is required for this reaction. Specific mutation of a putative ATP phosphate-binding motif in the recombinant protein eliminated the ATPase and **RNA**-unwinding capacity. Significantly, these data suggest that the DEAH-box proteins act directly on **RNA** substrates within the spliceosome.

280UA

TITLE: The DExH protein NPH-II is a processive and directional motor for unwinding **RNA**

AUTHOR: **Jankowsky E**; Gross C H; Shuman S; **Pyle A M (Reprint)**

CORPORATE SOURCE: COLUMBIA UNIV, DEPT BIOCHEM & MOL BIOPHYS, 630 W 168TH ST,

NEW YORK, NY 10032 (Reprint); COLUMBIA UNIV, DEPT BIOCHEM & MOL BIOPHYS, NEW YORK, NY 10032; SLOAN KETTERING INST, PROGRAM MOL BIOL, NEW YORK, NY 10021; HOWARD HUGHES MED INST, NEW YORK, NY 10021

COUNTRY OF AUTHOR: USA

SOURCE: NATURE, (27 JAN 2000) Vol. 403, No. 6768, pp. 447-451. Publisher: MACMILLAN MAGAZINES LTD, PORTERS SOUTH, 4 CRINAN ST, LONDON N1 9XW, ENGLAND.
ISSN: 0028-0836.

DOCUMENT TYPE: Article; Journal

FILE SEGMENT: PHYS; LIFE; AGRI

LANGUAGE: English

REFERENCE COUNT: 22

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB All aspects of cellular **RNA** metabolism and processing involve DExH/D proteins, which are a family of enzymes that **unwind** or manipulate **RNA** in an ATP-dependent fashion(1). DExH/D proteins are also essential for the replication of many viruses, and therefore provide targets for the development of therapeutics(2). All DExH/D proteins characterized to date hydrolyse nucleoside triphosphates and, in most cases, this activity is stimulated by the addition of **RNA** or DNA(1). Several members of the family **unwind RNA** duplexes in an NTP-dependent fashion in vitro(1,3); therefore it has been proposed that DExH/D proteins couple NTP hydrolysis to **RNA** conformational chang-e in complex macromolecular assemblies(4). Despite the central role of DExH/D proteins, their mechanism of **RNA** helicase activity remains unknown. Here we show that the DExH protein NPH-II unwinds **RNA** duplexes in a processive, unidirectional fashion with a step size of roughly one-half helix turn. We show that there is a quantitative connection between ATP utilization and helicase processivity, thereby providing direct evidence that DExH/D proteins can function as molecu

L7 ANSWER 1 OF 2 BIOTECHDS COPYRIGHT 2000 DERWENT INFORMATION LTD
ACCESSION NUMBER: 1997-10739 BIOTECHDS
TITLE: Preparation of NTP-ase/RNA-**helicase** protein; human hepatitis C virus protein expression in insect cell culture using a baculo virus vector, for use in virucide screening involving DNA probe or RNA probe hybridization
AUTHOR: Collett M S; Pevear D C; Groarke J M; Young D C
PATENT ASSIGNEE: Viropharma
LOCATION: Malvern, PA, USA.
PATENT INFO: WO 9727334 31 Jul 1997
APPLICATION INFO: WO 1997-US1614 17 Jan 1997
PRIORITY INFO: US 1996-678771 11 Jul 1996; US 1996-10474 23 Jan 1996
DOCUMENT TYPE: Patent
LANGUAGE: English
OTHER SOURCE: WPI: 1997-393718 [36]
AN 1997-10739 BIOTECHDS
AB A new process for preparation of enzymatically active NTP-ase/RNA-**helicase** from an RNA virus involves expression in a eukaryote to form complete, authentic and native protein, followed extraction and purification in native form. The protein is preferably from human hepatitis C virus, human hepatitis G virus, human hepatitis GB virus, or a pesti virus or flavi virus. The entire open reading frame encoding the protein, or the complete NS3 protein coding region, may be expressed in an insect cell culture using a baculo virus vector, followed by immunoaffinity chromatography using hepatitis C virus protein-specific antibodies. The protein may have basal NTP-ase activity of 0-200/min (preferably up to 150/min) and RNA-**helicase** activity of over 0.001/min (preferably over 0.005/min). A method for assaying a compound for virucide activity against hepatitis C virus involves incubation of **duplex RNA** with the new protein, capturing labeled ss **release** strand products with an oligonucleotide conjugate and a capture DNA probe or RNA probe fixed to a solid adsorbent, and measuring **label** on the **release** strand. (57pp)

L7 ANSWER 2 OF 2 SCISEARCH COPYRIGHT 2000 ISI (R)
ACCESSION NUMBER: 92:682142 SCISEARCH
THE GENUINE ARTICLE: JY874
TITLE: VACCINIA VIRUS-RNA **HELICASE** - AN ESSENTIAL ENZYME RELATED TO THE DE-H FAMILY OF RNA-DEPENDENT NTPASES
AUTHOR: SHUMAN S (Reprint)
CORPORATE SOURCE: SLOAN KETTERING MEM CANC CTR, MOLEC BIOL PROGRAM, NEW YORK, NY, 10021 (Reprint)
COUNTRY OF AUTHOR: USA
SOURCE: PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA, (15 NOV 1992) Vol. 89, No. 22, pp. 10935-10939.
ISSN: 0027-8424.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: LIFE
LANGUAGE: ENGLISH
REFERENCE COUNT: 28
ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS
AB Three distinct nucleic acid-dependent ATPases are packaged within infectious vaccinia virus particles; one of these enzymes (nucleoside triphosphate phosphohydrolase II or NPH-II) is activated by single-stranded RNA. Purified NPH-II is now shown to be an NTP-dependent RNA **helicase**. RNA unwinding requires a divalent cation and any

one of the eight common ribo- or deoxyribonucleoside triphosphates. The enzyme acts catalytically to displace an estimated 10-fold molar excess of **duplex RNA** under in vitro reaction conditions. NPH-II binds to single-stranded RNA. Turnover of the bound enzyme is stimulated by and coupled to hydrolysis of NTP. Photocrosslinking of radiolabeled RNA to NPH-II results in **label** transfer to a single 73-kDa polypeptide. The sedimentation properties of the **helicase** are consistent with NPH-II being a monomer of this protein. Immunoblotting experiments identify NPH-II as the product of the vaccinia virus 18 gene. The 18-encoded protein displays extensive sequence similarity to members of the DE-H family of RNA-dependent NTPases. Mutations in the NPH-II gene [Fathi, Z. & Condit, R. C. (1991) Virology 181, 258-272] define the vaccinia **helicase** as essential for virus replication in vivo. Encapsidation of NPH-II in the virus particle suggests a role for the enzyme in synthesis of early messenger RNAs by the virion-associated transcription machinery.

PREV199800301132

TITLE: The DEAH-box protein PRP22 is an ATPase that mediates ATP-dependent mRNA **release** from the spliceosome and unwinds **RNA** duplexes.

AUTHOR(S): Wagner, John D. O.; **Jankowsky, Eckhard**; Company, Mahshid; **Pyle, Anna Marie**; Abelson, John N. (1)

CORPORATE SOURCE: (1) Div. Biol., 147-75, Calif. Inst. Technol., Pasadena, CA 91125 USA

SOURCE: EMBO (European Molecular Biology Organization) Journal, (May 15, 1998) Vol. 17, No. 10, pp. 2926-2937. ISSN: 0261-4189.

DOCUMENT TYPE: Article

LANGUAGE: English

AB Of the proteins required for pre-mRNA splicing, at least four, the DEAH-box proteins, are closely related due to the presence of a central '**RNA** helicase-like' region, and extended homology through a large portion of the protein. A major unresolved question is the function of these proteins. Indirect evidence suggests that several of these proteins are catalysts for important structural rearrangements in the spliceosome. However, the mechanism for the proposed alterations is presently unknown. We present evidence that PRP22, a DEAH-box protein required for mRNA **release** from the spliceosome, unwinds **RNA** duplexes in a concentration- and ATP-dependent manner. This demonstrates that PRP22 can modify **RNA** structure directly. We also show that the PRP22-dependent **release** of mRNA from the spliceosome is an ATP-dependent process and that recombinant PRP22 is an ATPase. Non-hydrolyzable ATP analogs did not substitute for ATP in the **RNA**-unwinding reaction, suggesting that ATP hydrolysis is required for this reaction. Specific mutation of a putative ATP phosphate-binding motif in the recombinant protein eliminated the ATPase and **RNA**-unwinding capacity. Significantly, these data suggest that the DEAH-box proteins act directly on **RNA** substrates within the spliceosome.

The DExH protein NPH-II is a processive and directional motor for unwinding **RNA**.

AUTHOR(S): **Jankowsky, Eckhard**; Gross, Christian H.; Shuman, Stewart; **Pyle, Anna Marie (1)**

CORPORATE SOURCE: (1) The Department of Biochemistry and Molecular Biophysics, Columbia University, 630 W. 168th St, New York, NY, 10032 USA

SOURCE: Nature (London), (Jan. 27, 2000) Vol. 403, No. 6768, pp. 447-451.
ISSN: 0028-0836.

DOCUMENT TYPE: Article

LANGUAGE: English

SUMMARY LANGUAGE: English

AB All aspects of cellular **RNA** metabolism and processing involve DExH/D proteins, which are a family of enzymes that **unwind** or manipulate **RNA** in an ATP-dependent fashion. DExH/D proteins are also essential for the replication of many viruses, and therefore provide targets for the development of therapeutics. All DExH/D proteins characterized to date hydrolyse nucleoside triphosphates and, in most cases, this activity is stimulated by the addition of **RNA** or DNA. Several members of the family **unwind RNA** duplexes in an NTP-dependent fashion in vitro; therefore it has been proposed that DExH/D proteins couple NTP hydrolysis to **RNA** conformational change in complex macromolecular assemblies. Despite the central role of DExH/D proteins, their mechanism of **RNA** helicase activity remains unknown. Here we show that the DExH protein NPH-II unwinds **RNA** duplexes in a processive, unidirectional fashion with a step size of roughly one-half helix turn. We show that there is a quantitative connection between ATP utilization and helicase processivity, thereby providing direct evidence that DExH/D proteins can function as molecular motors on **RNA**.

998:282354 CAPLUS
DOCUMENT NUMBER: 128:305668
TITLE: Spectroscopic **helicase** assay based on the displacement of fluorescent, nucleic acid-binding ligands
INVENTOR(S): Kowalczykowski, Stephen C.; Eggleston, Angela K.
PATENT ASSIGNEE(S): Regents of the University of California, USA
SOURCE: U.S., 17 pp.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5747247	A	19980505	US 1994-280020	19940725

AB The invention provides spectroscopic methods for detecting **helicase** activity and inhibitors of **helicase** activity. Samples are assayed for **helicase** activity by: (a) incubating a mixt. of the sample, double-stranded nucleic acid and a suitable **luminescent** marker which lumineses selectively in the presence of double-stranded nucleic acid; (b) exposing the mixt. to light capable of inducing luminescence from the marker; and (c) detecting the intensity of luminescence from the mixt. Alternatively, samples are assayed for **helicase** inhibitors by further including in the mixt. a **helicase** and incubating the mixt. under conditions whereby, but for the presence of an inhibitor of the **helicase** in the sample, the **helicase** would be capable of converting a portion of the double-stranded nucleic acid into single-stranded nucleic acid. In both assays, **helicase** activity is inversely proportional to the detected luminescence. The methods are particularly suited to high-throughput drug screening.

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Search Results - Record(s) 1 through 7 of 7 returned.

☐ 1. Document ID: US 6020164 A

L23: Entry 1 of 7 File: USPT Feb 1, 2000

US-PAT-NO: 6020164
DOCUMENT-IDENTIFIER: US 6020164 A
TITLE: Human RNA binding proteins

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw Desc | Image

☐ 2. Document ID: US 5994076 A

L23: Entry 2 of 7 File: USPT Nov 30, 1999

US-PAT-NO: 5994076
DOCUMENT-IDENTIFIER: US 5994076 A
TITLE: Methods of assaying differential expression

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw Desc | Image

☐ 3. Document ID: US 5962477 A

L23: Entry 3 of 7 File: USPT Oct 5, 1999

US-PAT-NO: 5962477
DOCUMENT-IDENTIFIER: US 5962477 A
TITLE: Screening methods for cytokine inhibitors

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw Desc | Image

☐ 4. Document ID: US 5922591 A

L23: Entry 4 of 7 File: USPT Jul 13, 1999

US-PAT-NO: 5922591
DOCUMENT-IDENTIFIER: US 5922591 A
TITLE: Integrated nucleic acid diagnostic device

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw Desc | Image

☐ 5. Document ID: US 5888792 A

L23: Entry 5 of 7 File: USPT Mar 30, 1999

US-PAT-NO: 5888792
DOCUMENT-IDENTIFIER: US 5888792 A
TITLE: ATP-dependent RNA helicase protein

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw Desc | Image

☐ 6. Document ID: US 5856094 A

L23: Entry 6 of 7 File: USPT Jan 5, 1999

US-PAT-NO: 5856094
DOCUMENT-IDENTIFIER: US 5856094 A
TITLE: Method of detection of neoplastic cells

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw Desc | Image

☐ 7. Document ID: US 5569824 A

L23: Entry 7 of 7 File: USPT Oct 29, 1996

US-PAT-NO: 5569824
DOCUMENT-IDENTIFIER: US 5569824 A
TITLE: Transgenic mice containing a disrupted p53 gene

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw Desc | Image

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Term	Documents
ENERGY.DWPI,USPT.	707185
(22 AND ENERGY).USPT,DWPI.	7

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Search Results - Record(s) 1 through 7 of 7 returned.

☐ 1. Document ID: US 6043038 A

L24: Entry 1 of 7 File: USPT Mar 28, 2000

US-PAT-NO: 6043038
DOCUMENT-IDENTIFIER: US 6043038 A
TITLE: High-throughput screening assays for modulators of primase activity

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw Desc | Image

☐ 2. Document ID: US 6027877 A

L24: Entry 2 of 7 File: USPT Feb 22, 2000

US-PAT-NO: 6027877
DOCUMENT-IDENTIFIER: US 6027877 A
TITLE: Use of immobilized mismatch binding protein for detection of mutations and polymorphisms, purification of amplified DNA samples and allele identification

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw Desc | Image

☐ 3. Document ID: US 5994076 A

L24: Entry 3 of 7 File: USPT Nov 30, 1999

US-PAT-NO: 5994076
DOCUMENT-IDENTIFIER: US 5994076 A
TITLE: Methods of assaying differential expression

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw Desc | Image

☐ 4. Document ID: US 5854033 A

L24: Entry 4 of 7 File: USPT Dec 29, 1998

US-PAT-NO: 5854033
DOCUMENT-IDENTIFIER: US 5854033 A
TITLE: Rolling circle replication reporter systems

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw Desc | Image

☐ 5. Document ID: US 5843737 A

L24: Entry 5 of 7 File: USPT Dec 1, 1998

US-PAT-NO: 5843737
DOCUMENT-IDENTIFIER: US 5843737 A
TITLE: Cancer associated gene protein expressed therefrom and uses thereof

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw Desc | Image

☐ 6. Document ID: US 5763174 A

L24: Entry 6 of 7 File: USPT Jun 9, 1998

US-PAT-NO: 5763174
DOCUMENT-IDENTIFIER: US 5763174 A
TITLE: RNA editing enzyme and methods of use thereof

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw Desc | Image

☐ 7. Document ID: US 5658751 A

L24: Entry 7 of 7 File: USPT Aug 19, 1997

US-PAT-NO: 5658751
DOCUMENT-IDENTIFIER: US 5658751 A
TITLE: Substituted unsymmetrical cyanine dyes with selected permeability

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw Desc | Image

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Term	Documents
FLUORESCEIN.DWPI,USPT.	10304
ISOTHIOCYANATE.DWPI,USPT.	11277
RHODAMINE.DWPI,USPT.	9554
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L2: Entry 2 of 2 File: DWPI Nov 11, 1998

DERWENT-ACC-NO: 1997-393718
DERWENT-WEEK: 199849

TITLE: Preparation of NTPase/RNA helicase protein - by recombinant eukaryotic expression of gene from RNA viruses, useful in assays for anti-viral compounds

INVENTOR: COLLETT, M S; GROARKE, J M ; PEVEAR, D C ; YOUNG, D C

PATENT-ASSIGNEE:

ASSIGNEE	CODE
VIROPHARMA INC	VIRON

PRIORITY-DATA:

1996US-0678771	July 11, 1996
1996US-0010474	January 23, 1996

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
EP 876512 A1	November 11, 1998	E	000	C12Q001/70
WO 9727334 A1	July 31, 1997	E	057	C12Q001/70

DESIGNATED-STATES: AT BE CH DE DK ES FI FR GB GR IE IT LI NL PT SE CA JP AT BE CH DE DK ES FI FR GB GR IE IT LU MC NL PT SE

CITED-DOCUMENTS:7.Jnl.Ref; US 5371017

APPLICATION-DATA:

PUB-NO	APPL-DESCRIPTOR	APPL-NO	APPL-NO
EP 876512A1	January 17, 1997	1997EP-0904912	N/A
EP 876512A1	January 17, 1997	1997WO-US01614	N/A
EP 876512A1	N/A	WO 9727334	Based on
WO 9727334A1	January 17, 1997	1997WO-US01614	N/A

INT-CL (IPC): C12N 9/14; C12N 9/50; C12N 9/99; C12N 15/40; C12N 15/51; C12Q 1/68; C12Q 1/70

ABSTRACTED-PUB-NO: WO 9727334A
BASIC-ABSTRACT:

Preparation of enzymatically active nucleotide triphosphatase (NTPase)/RN A helicase protein derived from and encoded by RNA viruses comprises:(a) expressing the NTPase/helicase gene encoded by the RNA virus in a eukaryotic expression system such that the complete, authentic, and native NTPase/RNA helicase protein is synthesised; (b) extracting NTPase/RNA helicase protein from the eukaryotic expression system in form of the native structure of the